

# Fission and capture measurement at J-PARC

JAEA

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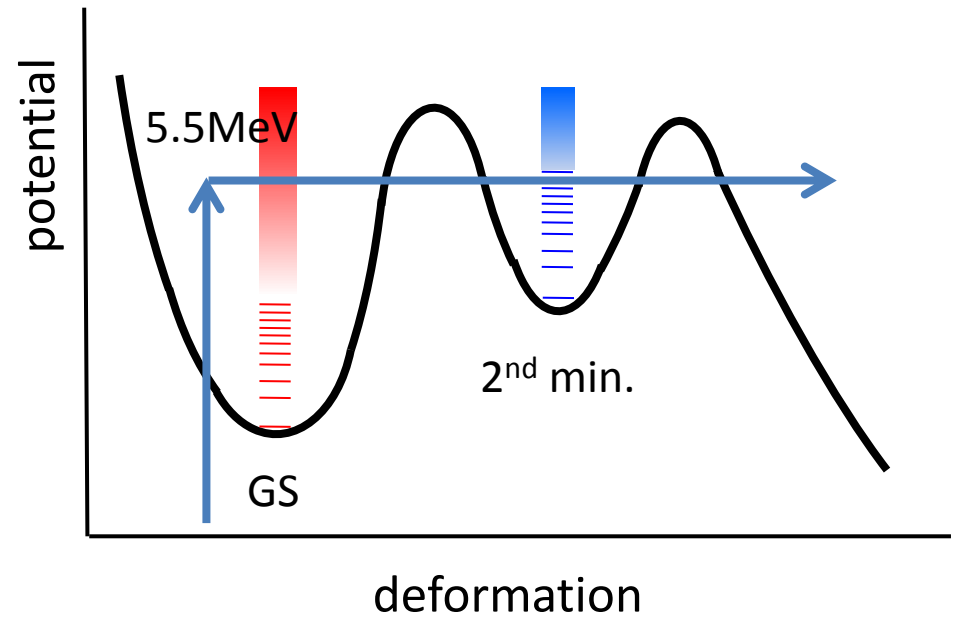
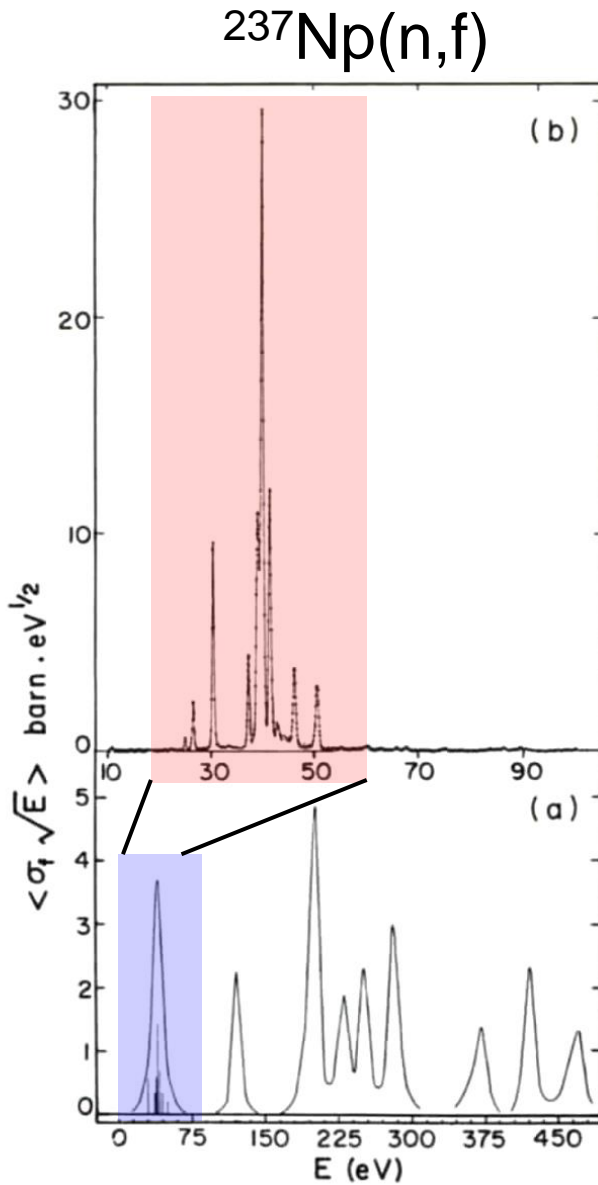
Tokyo Tech.

S.Chiba

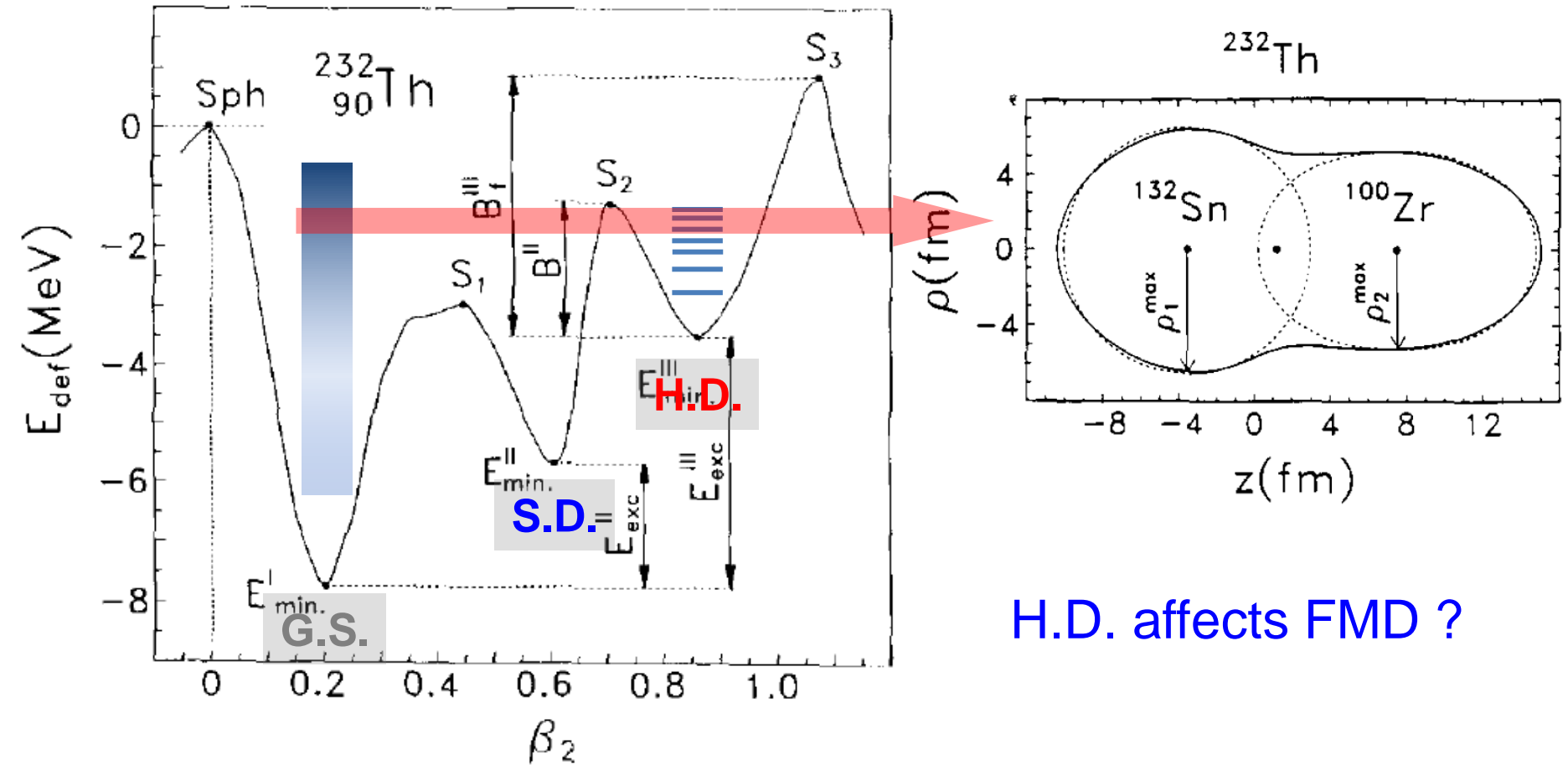
KURRI

T.Ohtsuki

# Resonance tunneling



# Hyper deformation & fission fragments



H.D. affects FMD ?

S.Cwiok et al, Phys. Lett.B322 (1994)304

# Plan

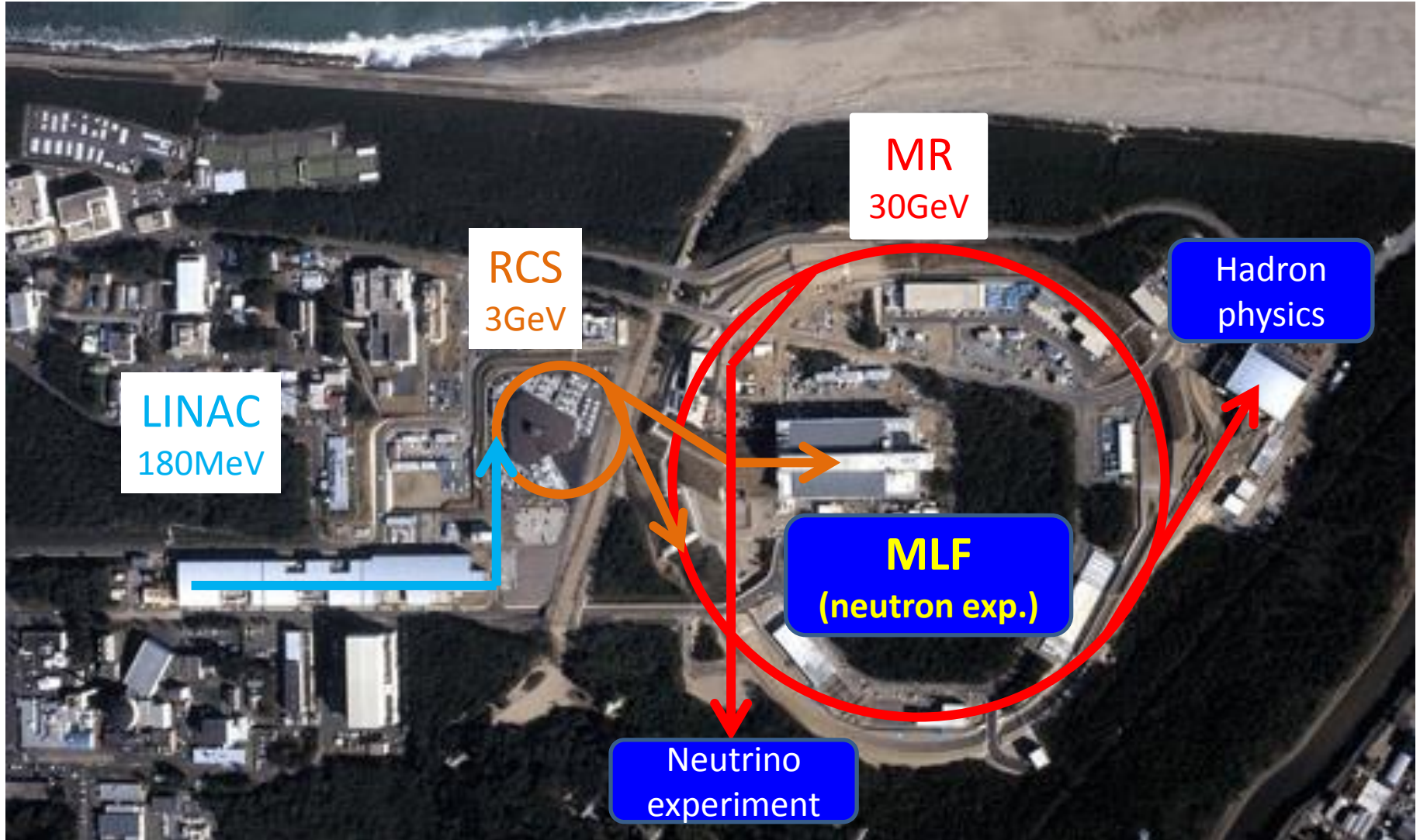
**Fission fragment detection is needed.**

**However**, usage of unsealed RI is not permitted now (safety regulation).

It is needed to show activities of fission research.

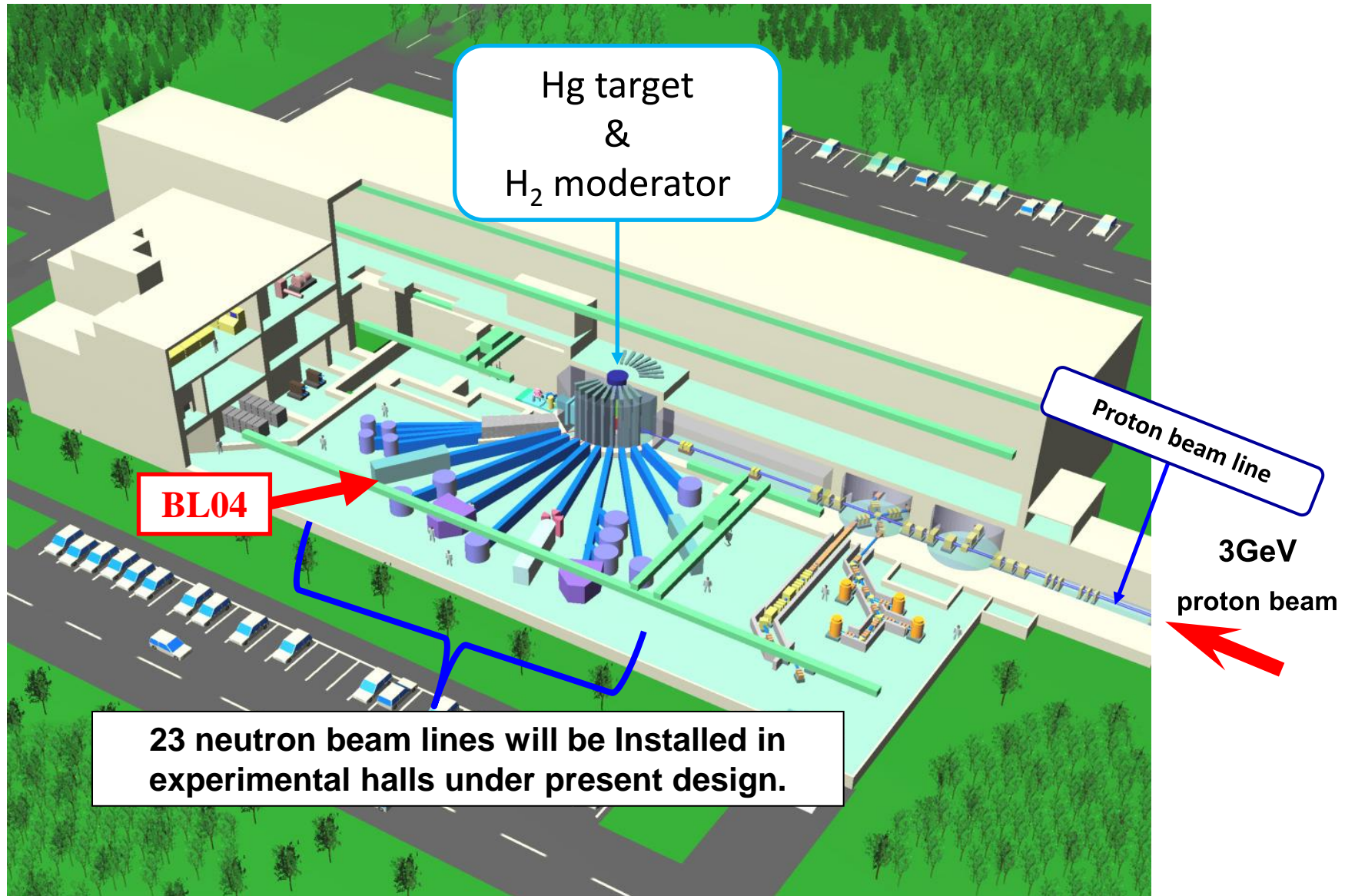
As the first step, we try to obtain  $\sigma_{\text{fiss}}$  by detecting prompt neutrons from a sealed RI.

# J-PARC : Japan Proton Accelerator Research Complex



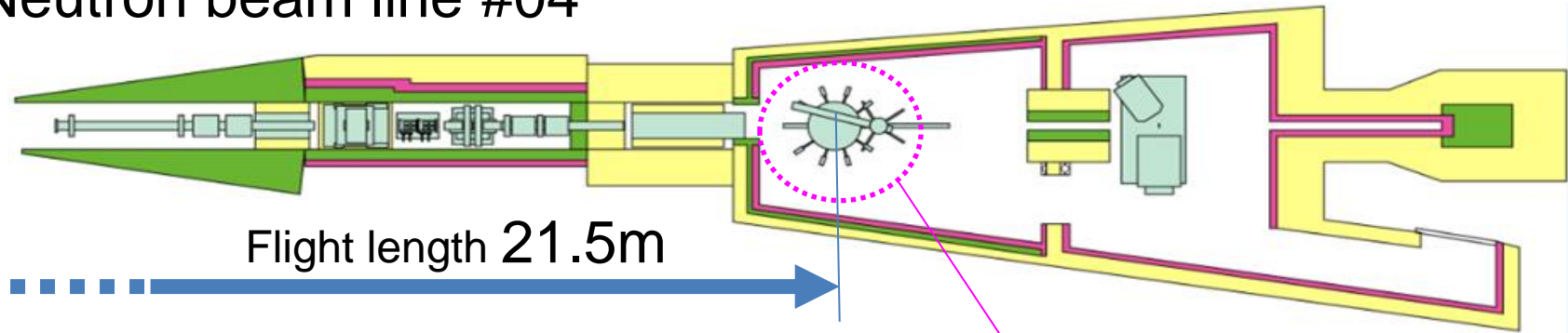


# MLF : Materials and Life science experimental Facility



# Experimental setup

## Neutron beam line #04



### <sup>241</sup>Am target

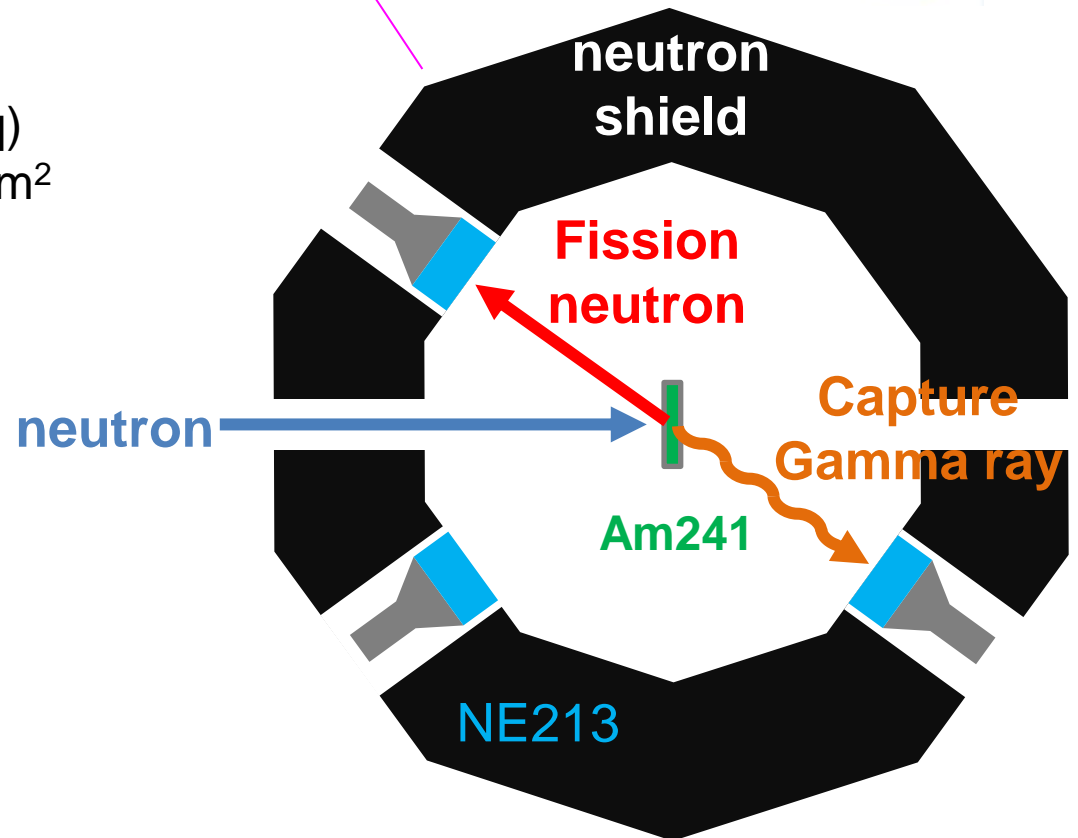
7.5mg dioxide powder (~1GBq)  
thickness  $2.4 \times 10^{-19}$  atoms/cm<sup>2</sup>  
Al powder (binder)  
Packed in Al container  
isotopic purity > 99.9%

### NE213 liq. scintillators

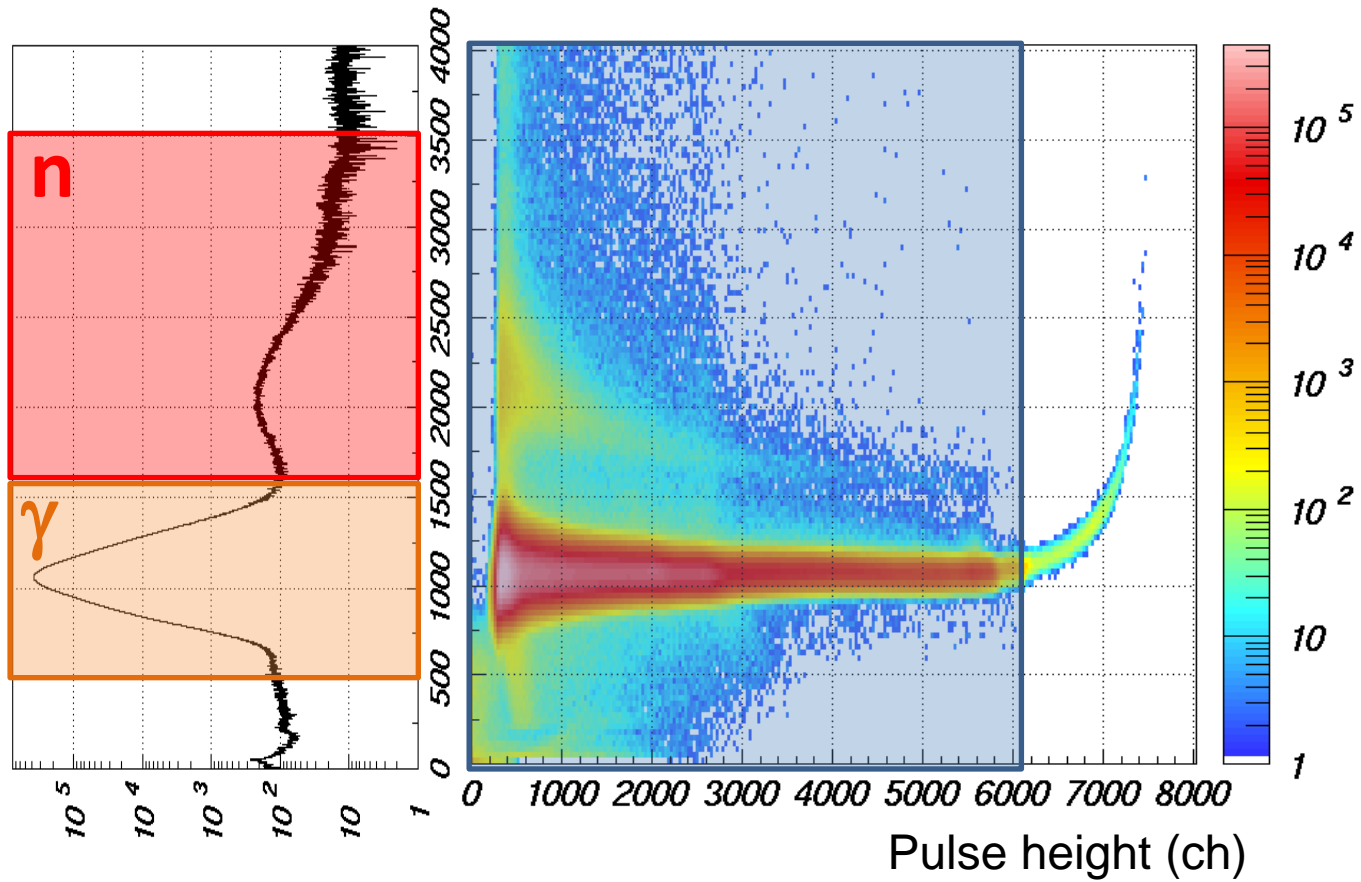
(4" diam. × 2") × 3  
n-γ discrimination

### Measurement time

<sup>241</sup> Am	62 hours
Al case	5 hours

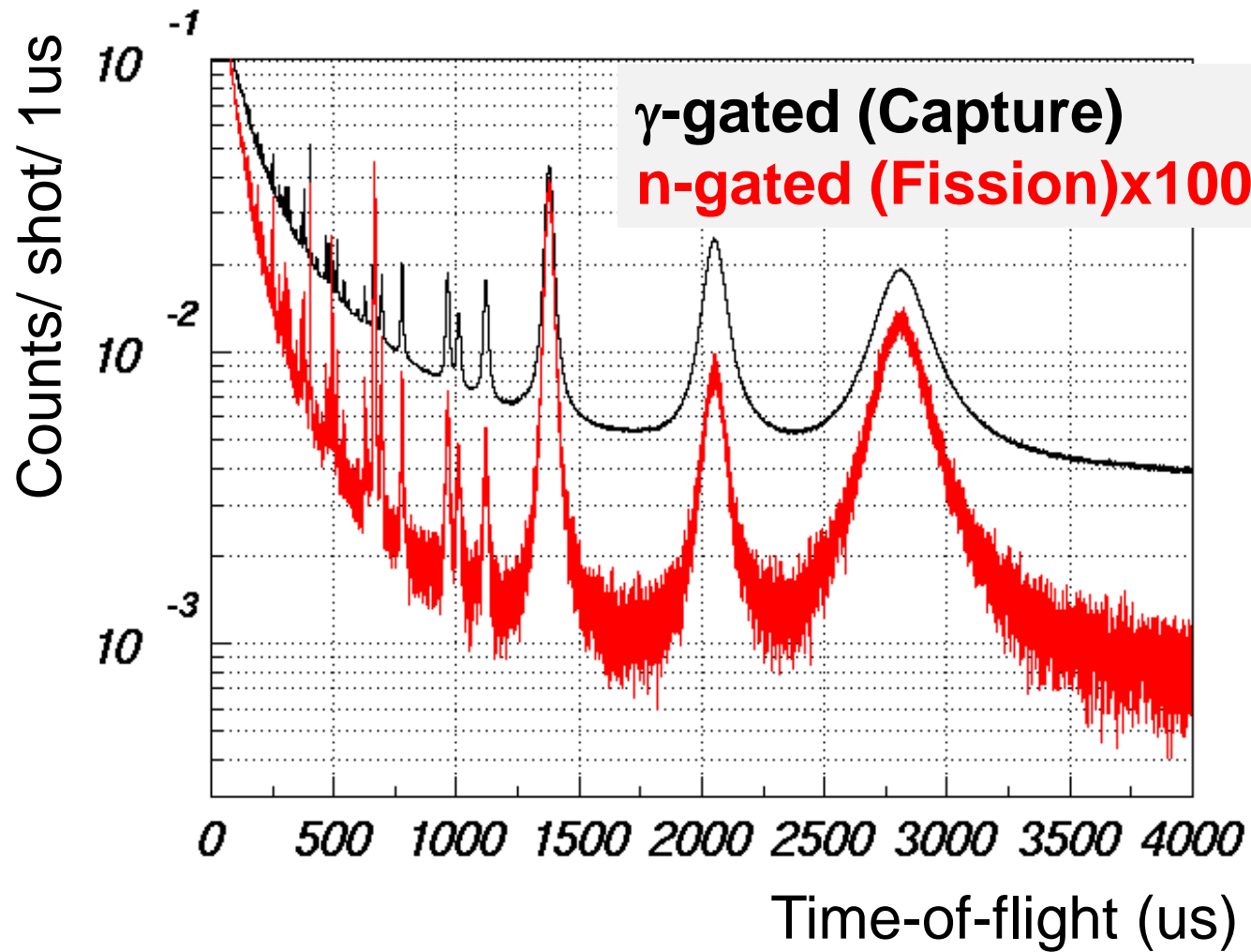


# Event selection

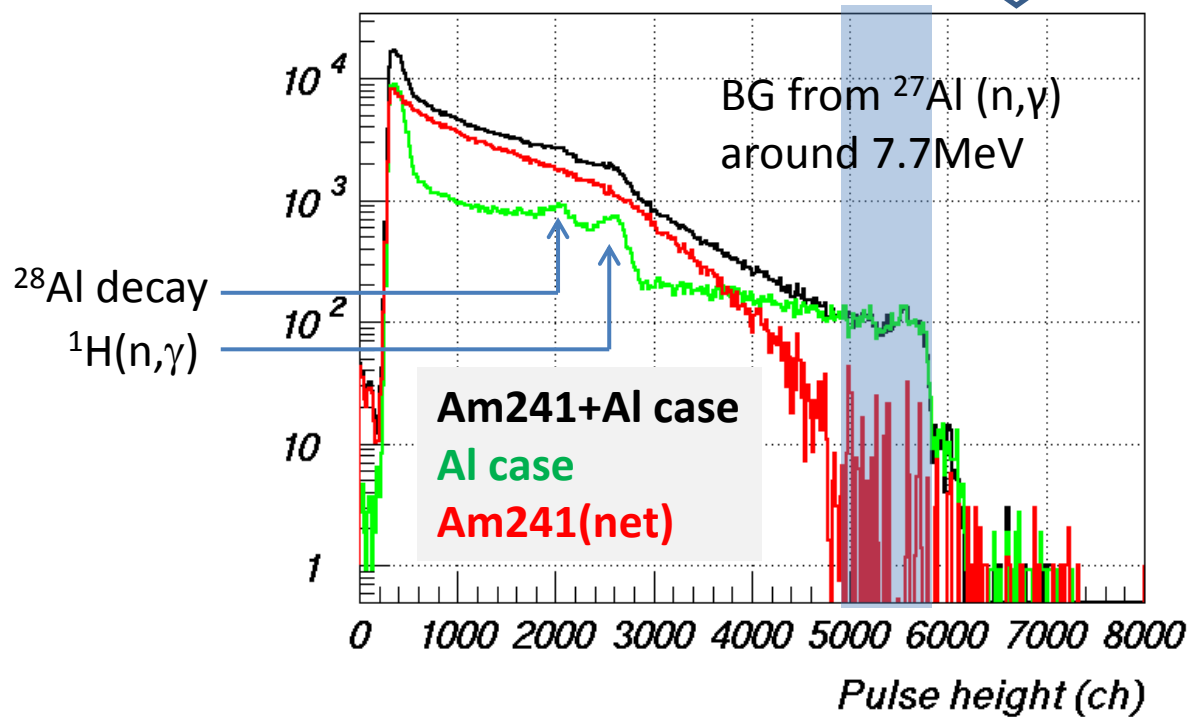
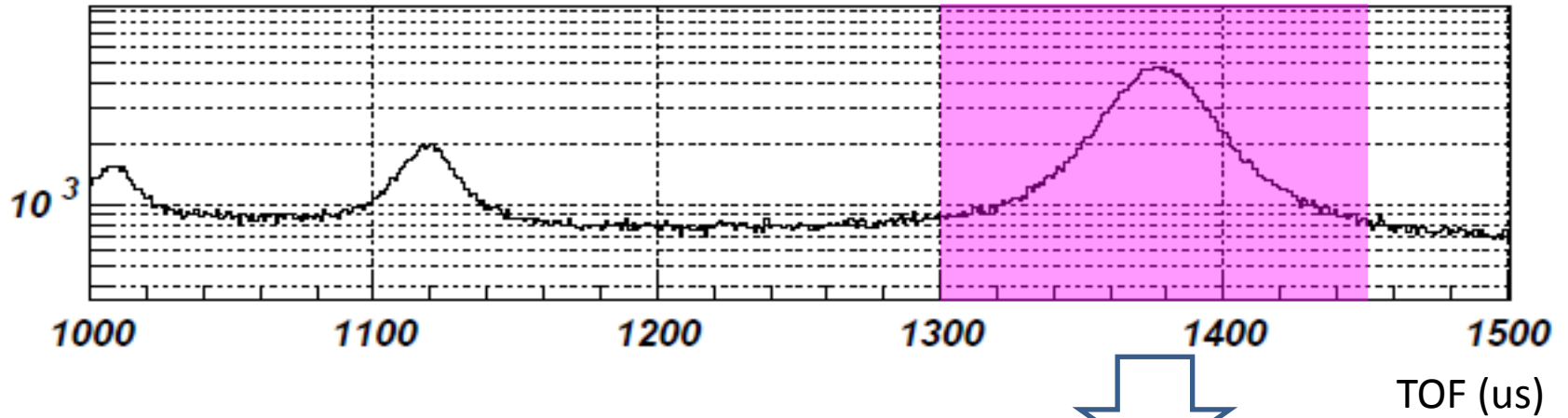




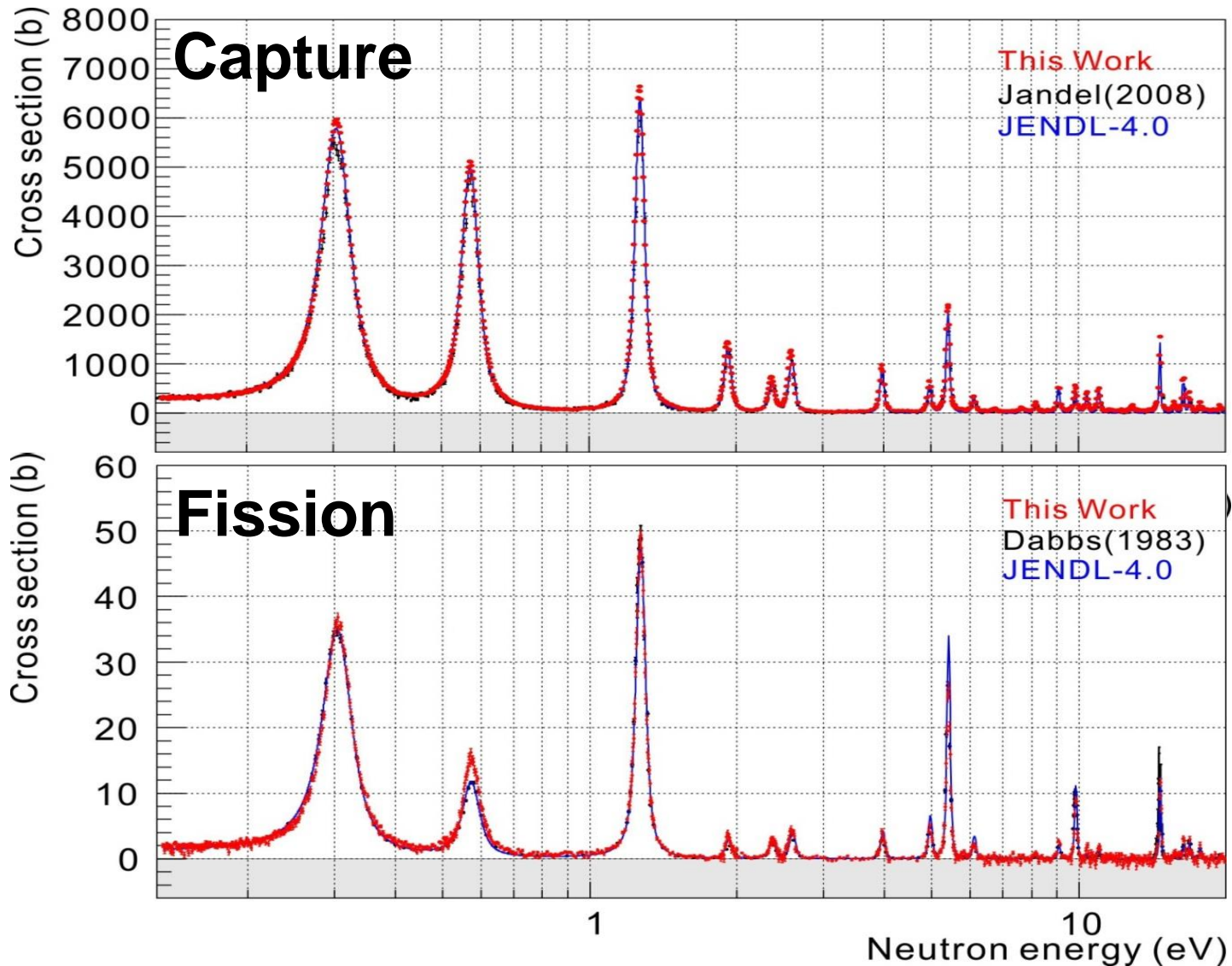
# TOF spectrum



# Background from Al case

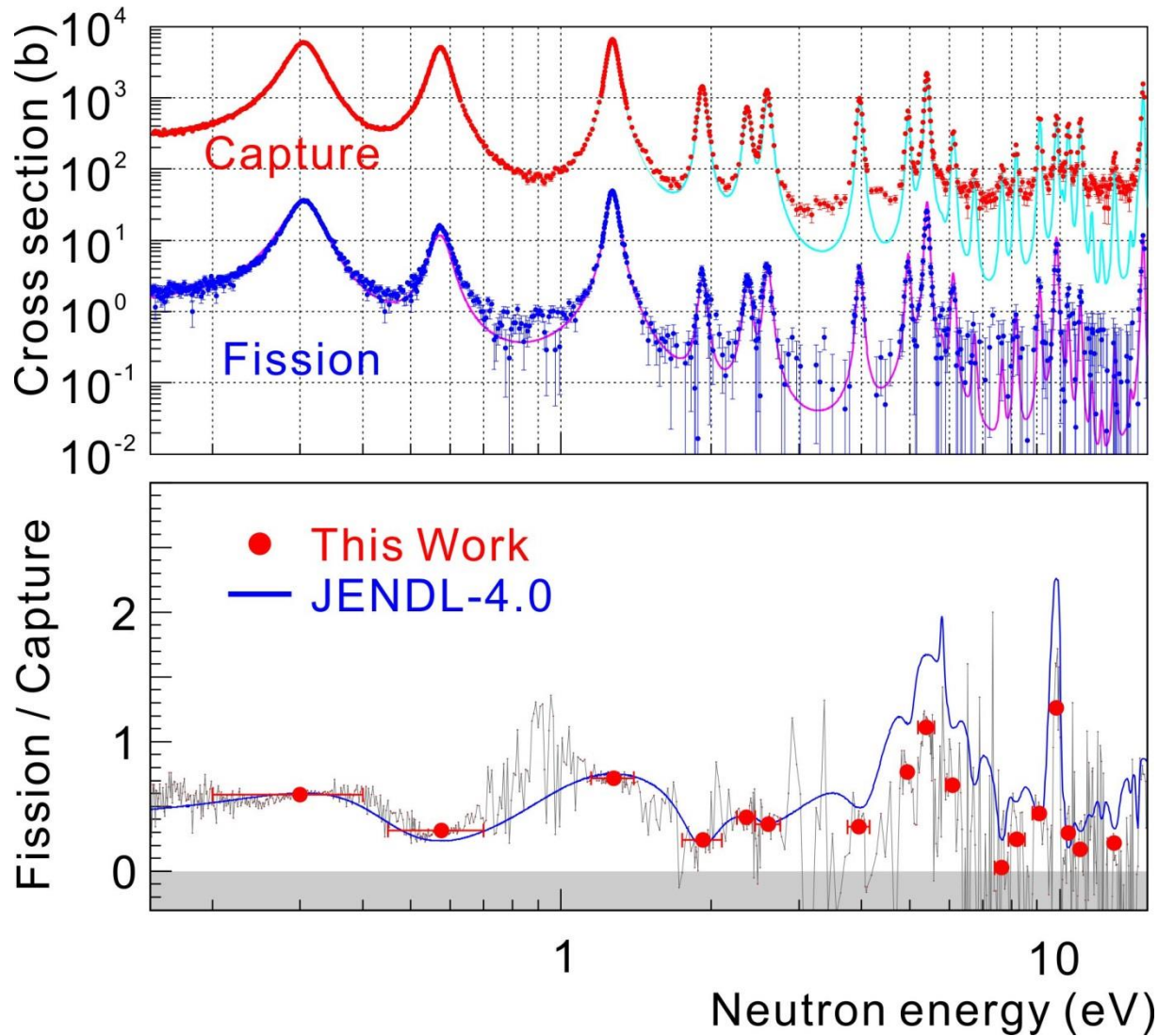


# Cross sections



normalized at the first resonance

# Fission / Capture



By taking the ratio, uncertainties due to dead-time and self-shielding correction can be reduced.

# Summary

- ❑ We are planning fission research at J-PARC.
- ❑ Unsealed RI are not available now.
- ❑  $^{241}\text{Am}(n,f)\&(n,\gamma)$  was measured using a sealed RI.

Thank you for paying attention